

THE CRATER CHRONICLE

A Tribute to Charles Glaser

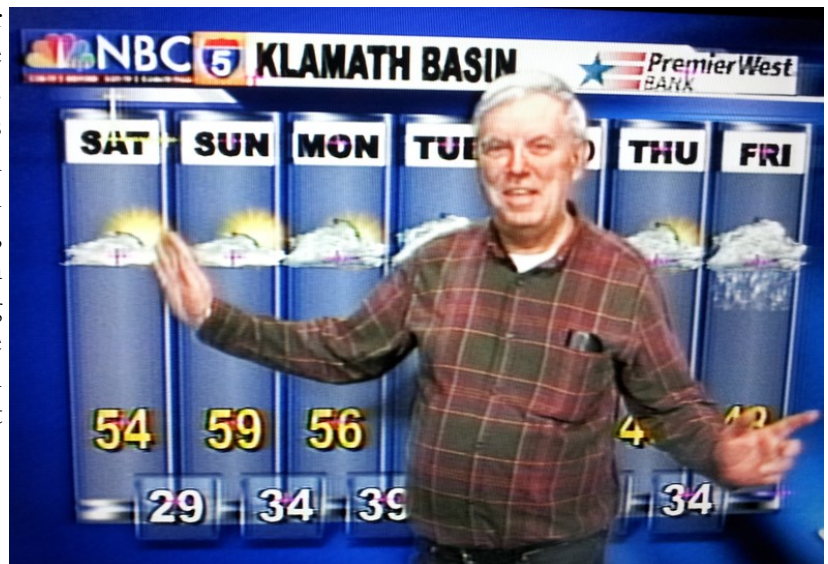


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**Spring Begins
March 20 at
3:45 pm PDT.**

After 47 years of government service, Charles "Chuck" Glaser retired in October of 2014. Chuck started his government career in the Air Force before serving 43 years with the National Weather Service. Chuck was a meteorological technician in Redwood City, CA; Medford, OR; and Reno, NV. He returned back here to the Medford office as the Data Acquisition Program Manager where he helped to develop and maintain our extensive cooperative observer (COOP) program which provides invaluable data to our forecasters. He is also responsible for establishing a top-notch upper air program that continues to be ranked among the highest quality ratings every year. His extensive knowledge in local climatology is rivaled only by his knowledge and love of baseball as well as popular music from the 50's and 60's. Chuck still lives in Medford and drops in from time to time, checking in on us, and making sure the place hasn't fallen apart without him.



Climate Change

John Lovegrove, Meteorologist-In-Charge

I will take a risk in this inaugural issue of the revived Crater Chronicle to discuss a topic that can be a hot button for some - climate change. Please note that I use the term "climate change" and not "global warming." Though the global average temperature is rising, the effects we are seeing vary across the globe and climate change is a more accurate description.

We in the National Weather Service are frequently asked "Is this <insert weather event here> being caused by climate change?" Well, that is not how weather and climate work. It isn't that simple. A great analogy was produced in a video by the University Center for Atmospheric Research and the National Center for Atmospheric Research that compares climate change to steroid use in baseball. You can find that video on YouTube here: <https://www.youtube.com/watch?v=MW3b8jSX7ec>. To sum up the video, a baseball player will hit a certain number of home runs without steroids and that number will likely go up when he does start using them (plus all the bad side effects). Since he was fully capable of hitting a home run before, it is impossible to say that any single home run after use started was due to the steroids but the trend went up. The same goes with weather. When we look at heat waves, floods, hurricanes, etc., they have always occurred through history so we can't attribute any single event to climate change. It is how often these events will recur



Lake Oroville - July 20, 2011



Lake Oroville - September 5, 2014

Extreme drought conditions in California have significantly lowered Lake Oroville in Butte County.

Photo obtained from: <http://sacramento.cbslocal.com/photo-galleries/2014/09/30/lake-oroville-before-during-drought/>

that is affected by climate change.

We can take this a step further to say that a cold snap or snow storm doesn't prove that climate change isn't happening. Weather is very complex and highly variable so there will always be cold snaps, heat waves, snow storms and droughts. It is in the long-term trend that climate change shows itself.

So, what is expected for the State of Jefferson? The major impact is expected to be less snowpack. This will affect both the depth and duration. This in turn has a great impact on our stream flows. Concerns that will be affected by the lower stream flows include irrigation, hydroelectric power and salmon runs. Current research indicates as much as a

50% reduction of snowpack by 2050 and a 80-90% reduction by 2100. Overnight minimum temperatures are also expected to rise. Overall temperatures are expected to be 2 to 4°F warmer by 2050 and 4 to 12°F warmer by 2100. The general weather pattern will also favor extremes - periods of heavy rain, heavy snow, droughts, etc. This is due to the increase of water vapor in the atmosphere and an amplified/energized jet stream.

In the next issue of the Crater Chronicle, I'll discuss climate models.

To Be In Drought or Not To Be...That Is the Question

Ryan Sandler, Warning Coordination Meteorologist

Most people are asking “what’s going on with the weather?” If you looked at this wet season’s rainfall across southern Oregon and far northern California you’d think everything was hunky-dory. However, if you were to dig deeper into the snowpack data (pun intended) you would find a record low snowpack across the region. Why the huge difference? Does this mean we’re in a drought?

Let’s begin with why rainfall has been decent, but snowfall has been seriously lacking. Figure 1 below shows how much warmer than normal it has been from October through February. Many areas have been 4 to 5 degrees F warmer than normal for a five month period. This record warmth is the difference between heavy rain or a blizzard at 5000 feet. For example, we had a two day storm just before Christmas which brought over 8 inches of rain to Crater Lake National Park and lowered the snow depth by 6 inches. We have seen a winter pattern set up with weeks of dry weather interrupted by warm “Pineapple Express” storms. These storms have brought heavy rain and even flooding, making up for the long dry periods but not adding greatly to the snowpack.

have drought. Near the Oregon coast there has been near normal rainfall and average soil moisture conditions this past winter. This region contains many small rivers which don’t rely on winter snowpack. Therefore we would expect few impacts and little to no drought.

As you move inland to the Umpqua, Rogue, and Klamath Basins there is a much greater dependence on snowpack. The snowpack is expected to melt slowly during the long and hot summer dry season helping to maintain streamflows and replenish the many large reservoirs as well as the unregulated smaller streams used for irrigation. This year the region has received near normal rainfall, but the snowpack as of early March was only 17% of normal in the Umpqua/Rogue Basins, and a dismal 10% of normal in the Klamath Basin. The larger reservoirs such as Lost Creek Lake and Upper Klamath Lake were near normal, but many smaller reservoirs were still below normal due to low precipitation over the past few years.

The lack of snowpack could have severe consequences this summer. Unregulated streams could dry up early in the season and reservoirs may be drawn-down quickly resulting in water shutoffs or preventing those with junior water rights from receiving a full allotment of irrigation water. These impacts occurred last summer and unless we see a cool and very snowy spring, it looks like a similar situation. All of these negative impacts will likely occur across far northern California as well. So, here’s to hoping for a cool and very wet spring despite the seasonal forecast calling for warmer and drier than normal conditions.

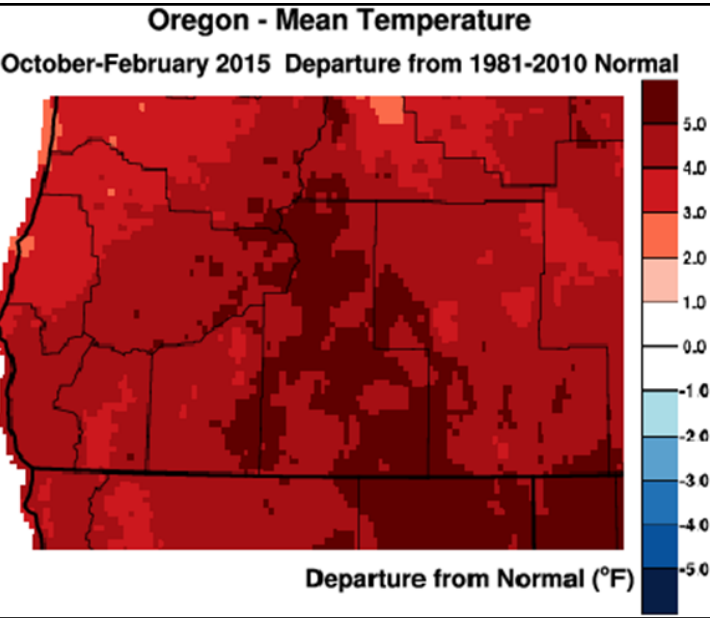


Figure 1: Graphic depicting how much warmer it has been compared to normal. All of the area has been at least 2-3 degrees warmer than normal.

Well, what about the drought? The severity of a drought is not easy to define. Figure 2 shows conditions ranging from no drought near the coast to extreme drought from the southern Cascades eastward. Why such a huge difference? When we classify drought we rely on impacts to people and the economy. If you have enough water for drinking, watering lawns, and growing crops while still having a decent supply leftover then you probably don’t

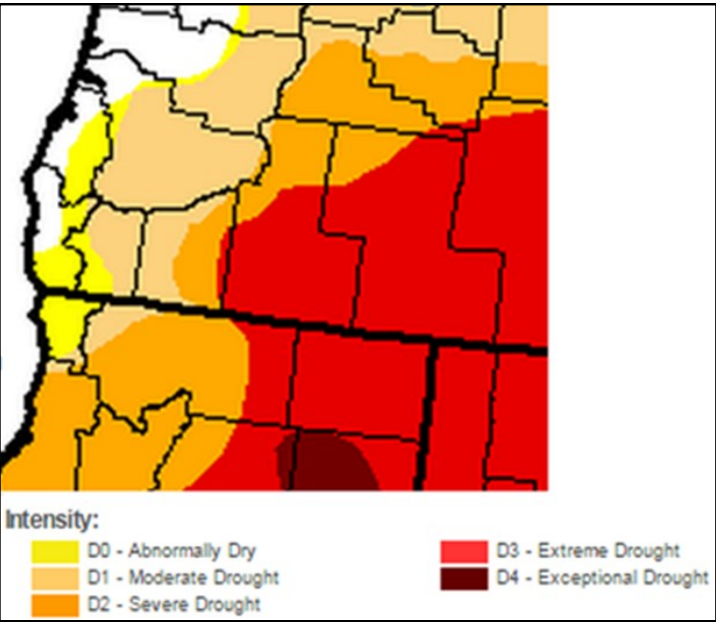
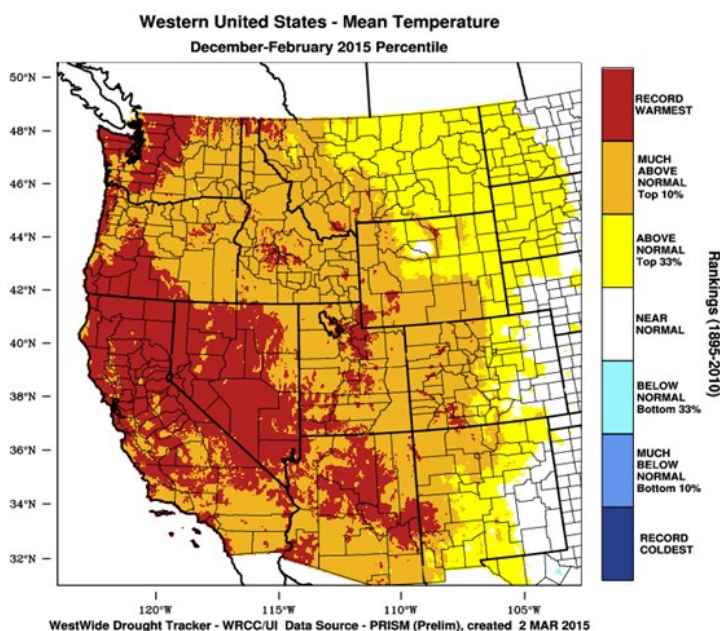


Figure 2: Current drought conditions across the forecast area as of February 2015.

Fire Season Outlook 2015

Brett Lutz, Forecaster

Record warm mean temperatures during the core winter months of December, January, and February have resulted in record to near record low snowpack across the forecast area. While precipitation amounts have been near normal this wet season, the fact that there is little to no snowpack below most 6,000 foot elevations and only about 33% of normal at measuring sites above this elevation is cause for concern for our forests this fire season. The negative effects of long term water deficits on vegetation, mostly incurred during the 2013-2014 drought, are also cause for concern. However, the severity of the 2015 fire season will not only depend on the conditions that have already occurred, but on what weather conditions we experience this spring and summer.



Spring Moisture:

The winter snowpack serves as a moisture reservoir for subalpine plants and springs, lakes, and creeks at lower elevations. It, therefore both directly and indirectly, serves as a limiting factor for fire starts and as barrier to fire spread. Without it and with less of it, these subalpine plants, springs, lakes, and creeks will dry up faster during the dry season if new precipitation does not fall with reasonable frequency, about every week or two, depending on duration and amount. Higher air temperatures increase the rate of water loss and, conversely, cooler temperatures diminish the rate of water loss. Due, in part, to the presence of persistently 1.0-3.0 degree Celsius/ 1.8-5.4 degree Fahrenheit above normal sea surface temperatures along the west coast of North America and over the eastern Pacific Ocean, mean temperatures are expected to be



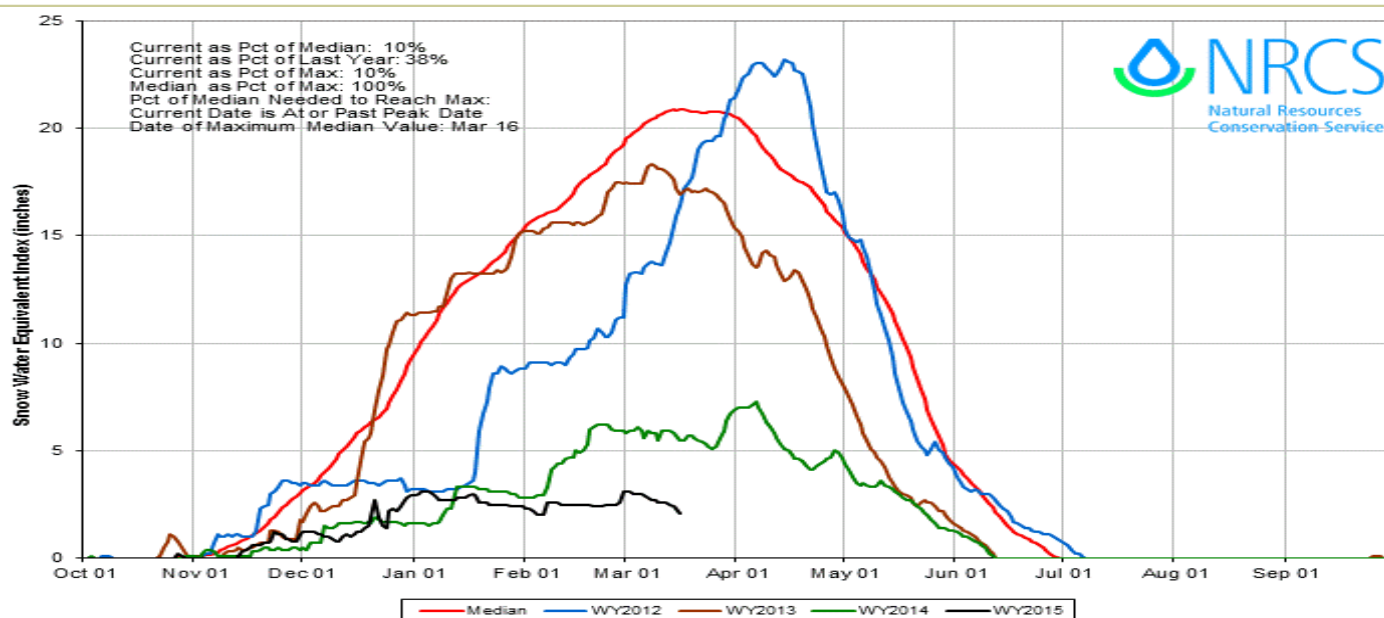
2014: Onion Fire, 15 miles west of Grants Pass, OR.

Photo Credit: Jamie Lilienthal

generally above normal through the spring and the summer dry season. Thus, the temperature outlook favors a faster spring and summer drying rate than is normal.

The seasonal precipitation forecast tends to have less reliability than does the temperature forecast, especially in the transition seasons of spring and fall, and is certainly one of the biggest factors in predicting fire season. Overall, March is most likely to end as drier than normal over the forecast area, with the chances of drier than normal greatest along and near the coast and least over southeastern portions of the area. The Climate Prediction Center's April, May, June, and July forecasts indicate equal chances for below, near, and above normal precipitation for the area. Raw climate model projections, indicate a reasonable possibility of above average precipitation over much of the area during at least two of these months, centered on May, and more so over southeastern portions of the area than northwestern portions of it. In short, above average precipitation in the spring would slow the onset of active fire season, while below average precipitation would move up that onset. Typically, we expect active fire season in southern Oregon and northern California to be primarily during July and August, but with the possibility of active months occurring as early as May and as late as October.

Continued on next page...



The Rogue Umpqua Basin snowpack as of 3/16/2015

Ignitions / Lightning:

The severity of fire season across the area, ultimately, depends on the number of fires started and their ability to spread. While the first two sections of this article focused on the expected degree of dryness, if there is no ignition source then there is no fire problem. Preceding dryness clearly affects the probability of ignition, both human and lightning caused. For our mostly rural forecast area with large expanses of forest, lightning is the primary ignition source for most wildfires. How well this lightning potential is forecast can help fire agencies contain and extinguish these fires before they become large. However, significant amounts of lightning on dry fuels, especially in remote areas, can overwhelm initial attack firefighting resources. When this occurs we end up with large wildfires, which then require long term management teams and usually result in smoke impacts to residents and other sectors of the local economy.

Due to the complexities of thunderstorm forecasting, accurate prediction of the location and coverage of lightning is difficult, even one day before it occurs. Therefore, providing a seasonal outlook for lightning is even more difficult. Research does indicate that the summer monsoon is generally stronger and further north reaching following wet seasons with below normal snowpack in the southwestern United States. This season's snowpack in the southwestern US is generally below normal. However, this research indicates no trend in monsoonal thunderstorms north of about Lake Tahoe in the Sierras. If current water temperature anomalies persist and the monsoon is more robust than normal, as current climate models indicate, we would generally expect at or above normal lightning across the forecast area. This is because we are often on the edge of the monsoon and an increased monsoon would increase the chances and frequency that it would affect us.

Warmer than normal sea surface temperatures along the west coast of North America would increase the amount of moisture in the air if all other forecast elements were equal. This would increase the chance of thunderstorms in our area since available moisture is often the limiting factor. That said, it is important to remember that amount, timing, location, accuracy of lightning prediction, and availability of firefighting resources all play into how long wildfires burn.

Resultant 2015 Fire Season:

In conclusion, current and expected weather conditions yield significant concern regarding the severity of the 2015 fire season. Two consecutive years of snow drought, the lingering water deficits of from recent precipitation drought, and observed and forecast above average temperature conditions all point to above normal dryness for the upcoming spring and summer. However, uncertainties regarding the amount of spring and early summer precipitation loom large in modulating when active fire season will begin. It does appear that at least some periods of significant precipitation centered on or around May should slow the onset of major fire concerns. Lightning frequency and coverage predictions are in their infancy. Without ignitions there are, of course no fires. Altogether, indications are that we should expect at or above normal lightning across the area. All things considered, there is increased potential of an above average severity 2015 fire season.

The latest fire season outlooks from the Department of Interior's Predictive Services can be found at the following link:

http://www.predictiveservices.nifc.gov/outlooks/monthly_seasonal_outlook.pdf

From Hurricanes to Wildfires: Being Prepared is Essential for Peace of Mind

Brad Schaaf, Meteorologist Intern



http://wildfire.blog
nfp.org/2014/08/

Having lived in Florida for the past seven years, I constantly wondered what I would do if a hurricane threatened my home. Meeting and working with meteorologists and emergency managers throughout Florida, their message was consistent: Develop a plan. It was something easy I could do to protect myself as well as my family. Although I never used it, it still gave me peace of mind knowing I had a plan if disaster struck.

“Southern Oregon and northern California are vastly different than Florida,” I said to myself as I arrived in Medford last July. I knew wildfires tended to be quite a problem out here, but I never imagined how impactful they could be. It was early August when I realized how important re-developing my plan would be.

The Oregon Gulch Fire started on July 30th, and quickly became a large fire that spread rapidly. By the time it was contained, the fire had burned about 35,000 acres of land; and it caused many families to evacuate their homes. I began to ask myself: “What would I have done in that situation?”

When people are asked or told to evacuate, they typically do not have time to formulate a plan and collect essentials for their evacuations. This is why it is vital to prepare *before* the emergency happens by forming a

plan, making an emergency kit, and preparing your property. In the case of wildfires, this would be creating a defensible space.

I decided that my first step should be to tailor my plan to one more specific to wildfires since I'm not in Florida anymore. A good place to start with any comprehensive emergency plan is to answer the following questions:

- When am I going to evacuate? Am I going to wait for the evacuation order, or should my family depart sooner?
- Where will I go in the event of an evacuation? Will I be staying with family or friends, in a hotel, or in a shelter?
- What considerations should I make for children, pets, the elderly, or people with special needs?
- Where am I going to keep my written plan so it is easily/quickly accessible?

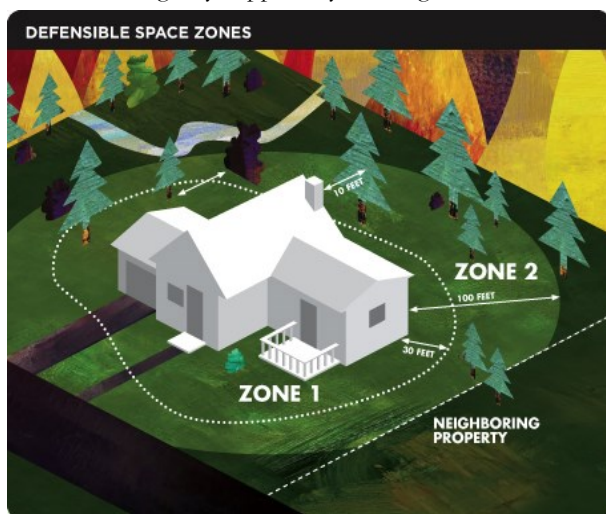
Getting kids involved with developing the plan is a great way to expose them to the decision-making process; and they will feel a sense of empowerment being involved with the planning process.

Next, I decided what should be in my emergency kit. Making the kit easy to grab and go in a moment's notice is vital. Some basic essentials are: a three-day supply of water and non-perishable food, flashlight, battery-powered radio, extra batteries, first aid kit,

and a can opener or multi-use tool. Other things to include are important documents, extra money, and the plan itself! This way if I had 5 minutes to evacuate, I could grab my kit and leave. It is a good idea to get kids involved with this as well! A good way is to turn the process into a scavenger hunt to find items. This gets kids thinking about what they would put into a kit while playing a game.

The last thing I need to do is something that will give me the most empowering feeling: create a defensible space for my property. Knowing that I can take steps before fire season to potentially save my home and property and reduce the fuels for fire spread gives me extra peace of mind. Detailed information on how to do this can be found at the Oregon Department of Forestry's webpage as well as the Firewise Community's website.

Disasters such as fires or hurricanes can be terrifying, but one does not need to feel helpless. Learning how to create a fire-wise home, devising a plan, and building a disaster supply kit has empowered me to be prepared for an emergency. As a result, I have extra peace of mind knowing that I'm ready to act when disaster strikes. As fire season rapidly approaches, will you be ready?



http://www.readyforwildfire.org/defensible_space/

Zone 1: Surrounds the structure and all attachments out to 30 ft. Remove all dead/dry plants, grass, weeds, leaves, and pine needles from this area as well as from the roof and gutters. Remove branches from over roof and keep branches at least 10 feet away from chimney. Move wood piles and propane tanks to Zone 2.

Zone 2: Extends from 30 ft. to 100 ft. around the structure. There should be 20 ft. between individual trees and 30 ft. between clusters of trees. Add “fuel breaks” like gravel walkways, ponds, and open areas. Keep trees pruned up 6 to 10 ft. from the ground. Keep the grass/weeds low and pick up dead vegetation.

Resources:

Developing a Plan:

- <http://www.ready.gov/make-a-plan>
- <http://www.ready.gov/kids/parents>

Preparing an Emergency Kit:

- <http://www.ready.gov/kit>
- <http://www.redcross.org/prepare/disaster/wildfire>

Defensible Space:

- <http://www.oregon.gov/odf/pages/homewildfiresafety.aspx>
- <http://www.firewise.org/>
- http://www.readyforwildfire.org/defensible_space/



Federal Agencies Working Together for You

Shad Keene, Forecaster



It's always good to hear about government agencies working together for the common good, so I thought I'd share with you one of our office's many federal partnerships. The National Weather Service Weather Forecast Office (NWS WFO) in Medford and the United States Coast Guard (USCG) along the Oregon Coast have a strong relationship that benefits the public in several ways.

There are three main elements in the partnership between WFO Medford and the USCG. These include weather-related decision support, training, and bar observation dissemination. First, WFO Medford has worked with helicopter pilots at Air Station North Bend for years to provide top notch 24/7 weather support through a tailored decision support webpage. USCG pilots are very weather-savvy and can fly in all types of conditions, but having a resource that provides relevant weather and environmental information in one single location better enables pilots and other USCG personnel to make weather-related decisions and saves critical search-and-rescue minutes. Just 5 minutes represents about 10 percent of the lifespan of a victim in 50 degree water, a water temperature that occurs frequently along our coastline.

Next, training is another important part of the relationship. Personnel from WFO Medford travel to Air Station North Bend at least once a year to learn about

the USCG mission, determine what weather affects them most, discuss weather products that may help their mission, and describe weather patterns that help pilots better understand the environment they operate in.

Lastly, the USCG provides bar observations in the form of webcam images and supplemental text information that are critical to NWS and mariner awareness of coastal ocean conditions. USCG collaboration with WFO Medford helped make these images available to the public.

WFO Medford is not the only case of a strong NWS/USCG partnership. Neighboring WFOs Portland and Eureka both provide training and weather support to their local USCG units. Additionally, WFO Portland has developed a webpage to display the barcams and conditions, which is very popular with mariners in the Pacific Northwest.

Next time you notice a USCG helicopter or an NWS weather balloon flying above your head, think of the important connection between these two agencies. The USCG's motto is *Semper Paratus*, meaning "Always Ready". By furthering our relationship with the USCG, WFO Medford is doing its part to ensure both the USCG and the nation are more "Weather Ready".





NWS Medford to Host Marine Workshop

Sven Nelaimischkies,
Forecaster

Western Region Marine Program Vision: Provide consistent messaging to our marine users and partners, utilizing sound science to enhance decision support

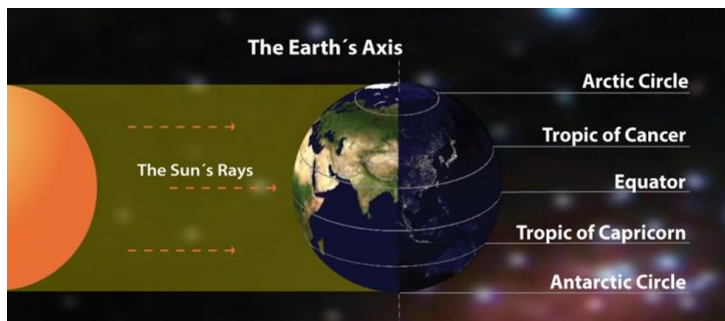
On March 25th and 26th, representatives from all the west coast NWS offices will come to Medford for a Marine Workshop. Offices attending include: Seattle, Portland, Eureka, Monterey, Los Angeles/Oxnard, and San Diego along with members from academia and the United States Coast Guard. Some goals of the Marine Workshop include such things as: improving our mutual understanding of our marine partners and customers, their use of our products and services, and learning how to best utilize the newest wave model available to us: the Nearshore Wave Prediction System. Another major goal of the Marine Workshop is to develop guidelines that identify conditions that result in the greatest surf zone hazards, as well as finding consistent methods for communicating these hazards to our customers.

Astronomy Happenings

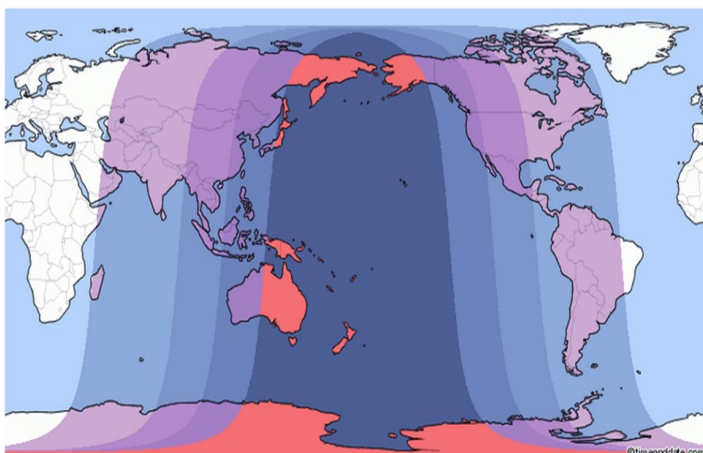
Misty Duncan, Meteorologist Intern

- Meteorological spring started at the beginning of March. However, the astronomical spring begins on the vernal equinox, A.K.A the spring equinox, which happens on March 20th at 3:45 p.m. PDT. Why such an exact time? That is the point in time when the earth's equator is perpendicular to the sun's rays, meaning that the earth neither tilts toward nor away from the sun. This also means that there is an equal amount of time during both day and night: 12 hours. Hence the word "equinox", which comes from Latin meaning equal night. After this point, the earth begins to tilt toward the sun where spring begins in the northern hemisphere and fall begins in the southern hemisphere.

ing a shadow on the moon. It will only be a partial eclipse because the entire moon will not be shrouded in the earth's shadow. It will also be partial in another sense: the moon will set before the event is finished. Sunrise on the 4th is at 6:49 a.m. PDT and the moon sets at 6:55 a.m. PDT. The whole event, however, doesn't end until almost 8 a.m. Weather permitting, the show will be visible for the majority of the event, including the peak. The eclipse begins around 2 a.m. PDT with the peak of the event happening around 5 a.m. The graphic below shows the optimal viewing locations with the west coast shaded in the "more than 75% of the event is visible" color.



The tilt of the earth on both the vernal and autumnal equinoxes.



Darkest blue/salmon color indicates 100% of event is visible, west coast is shaded in the 75% category.

- A partial lunar eclipse is set to occur during the early morning hours on the 4th of April. A lunar eclipse occurs when the earth passes between the moon and the sun, cast-

Cooperative Observer Program Awards

Spencer Higginson, Service Hydrologist



Left to Right: Ryan Sandler, Spencer Higginson, Doug Devitt, and John Lovegrove. Mr. Devitt holds his Benjamin Franklin Award presented to him for 55 years of service.

It started out as an informal deal between acquaintances in 1959. But to this day, Roseburg, Oregon resident Doug Devitt has kept his end of the bargain. Mr. Devitt recently received the Benjamin Franklin Award for 55 years of recording daily rainfall and snowfall. This is the first time that WFO Medford has given this award to an individual. Mr. Devitt said he's enjoyed doing it and learned a lot about the weather, and plans on reading the rain gauge for 55 more years.

2014

The Cooperative Observer Network is vital to our ability to track and forecast the weather. This network could not operate without the tireless help of our volunteer observers. These observers take daily observations year after year providing current information as well as historical records. No words can adequately express our appreciation for their commitment and dedication to the program.

Each year we deliver length-of-service awards to observers who have reached milestones. There are three types of awards: Individual, Honored Institution, and Family Heritage.

The Individual award is given to an observer after completing 10 years of service and then every 5 years thereafter, up to 40 years. After 40 years, the individual awards have different titles in honor of past observers. The 55-year individual award, known as the Benjamin Franklin Award was given to Doug Devitt of Douglas County, OR in 2014.

The Honored Institution award is given to an institution or industrial organization in which several people have taken observations over a period of years. Honored Institution awards are presented every 25 years.

The Family Heritage award is granted to a family upon achieving 75 years of continuous cooperative observations. Additional recognition is presented every 25 years thereafter. The Family Heritage award recipients often have observers representing many generations.

	Station Name	Observer Name	Years of Service/Service Date
Individual	Buncom 1NNE	Marcia L. Zellman	20 7/1/1994
	Chiloquin 12 NW	Jim Vangrinsven	10 7/29/2004
	Upper Ollala 1N	Mike Phillips	10 10/1/2004
	Odell Lake-East	Jon and Tammie Ditgen	10 11/5/2004
Institution	South Deer Creek	D.A. Devitt	55 12/7/1959
	Yreka	Dept. of Forestry Staff	100 2/1/1914
	Yreka	Brad Burgess	100 2/1/1914
	Happy Camp RS	Christina Robinson	100 3/1/1914
	Hart Mtn. Refugee	Jeff MacKay	75 3/13/1939

2015

	Station Name	Observer Name	Years of Service/Service Date
Individual	Williams 1NW	Raymond L. Prag	40 5/1/1975
	Etna	Jim G. Hendricks	30 7/22/1985
	Powers Telemetering	Matt Shorb	10 1/19/2005
Institution	Roseburg KQEN	Kyle Bailey	50 3/2/1965
	Butte Falls 1SE	Hank Falcon	25 5/1/1990
Family Heritage	Day	Laurel Lorenzen	75 3/1/1986

NATIONAL WEATHER SERVICE - MEDFORD, OREGON



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Our Vision

Professionals focusing on science, teamwork, and customer service to design and deliver the best decision-support information to our community.

Our Mission

Our team at the National Weather Service Office in Medford strives to deliver the best observational, forecast, and warning information through exceptional customer service, extensive training and education, maintaining quality electronic systems, and relying upon an outstanding team of weather spotters and cooperative observers. We do this within the overall mission of the NWS to build a Weather-Ready Nation:

To provide weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy. NWS data and products form a national information database and infrastructure which can be used by other governmental agencies, the private sector, the public, and the global community.

Our Values

Trust, Integrity, Professionalism, Service, Teamwork, Ingenuity, Expertise, and Enthusiasm.

About Us

The Weather Forecast Office in Medford, Oregon, is one of more than 120 field offices of the National Weather Service, an agency under the National Oceanic and Atmospheric Administration and the United States Department of Commerce. The Weather Forecast Office in Medford serves 7 counties in southwestern Oregon and 2 counties in northern California, providing weather and water information to more than a half-million citizens. We are also responsible for the coastal waters of the Pacific Ocean from Florence, Oregon, to Point St. George, California, extending 60 miles offshore. The office is staffed 24 hours a day, 7 days a week, and 365 days a year by a team of 26 meteorologists, hydrologists, electronic technicians, hydro-meteorological technicians, and administrative assistants, under the direction of Meteorologist-In-Charge John Lovegrove.

